

MEMORANDUM

To: Nick DiFrank
From: Bill Fox
Date: September 13, 2013
Project: Boulder Reservoir Traffic Access
Subject: Summer 2013 Traffic Access Data Summary

At your request I have summarized the automobile, pedestrian and bicycle traffic access data collected at the Boulder Reservoir during the summer of Year 2013 and compared the current information to past years reservoir access. This memorandum summarizes our findings:

Year 2013 Traffic Data Collection:

This summer traffic data was collected on the following five days:

- July 4th
- July 26th, a typical summer Friday
- July 27th, a typical summer Saturday
- August 4th, Ironman Race
- August 10th, Muddy Buddy Race

These same five days or events were observed during the summer of 2012, and typical summer Friday and Saturday data was also collected in the Year 2008. Reservoir traffic access data for all of these current and past days are summarized in Table 1 by travel mode. The current year data is highlighted in yellow next to last year's information for the same time period. In general counts were made for a period of inbound and outbound hours that were identified by reservoir staff as likely to capture the main arrival and departure flows at the reservoir. Within these access period, the peak arrival and departure hours were identified.

Table 2 includes tabular and graphical hourly automobile access for each observation day in 2012. Table 3 includes this same information for each observation day in 2013.

One new piece of data collected this year was a single "snapshot" of accumulated parked automobiles within the reservoir property during the July 4th, Ironman, and Muddy Buddy events. Reservoir staff estimated the time that was likely to capture the peak parking demand on each day, and parked vehicles were tallied in the 6 main parking areas on the reservoir property.

Year 2013 Reservoir Access Management:

It is our understanding that the access management plan for 2013 is similar to the Year 2012 for all typical and event days except July 4th. Last year on the holiday there was a “per vehicle” charge at the entrance. Many visitors, including a significant younger crowd of high school and college aged users took advantage, arriving in buses, vans, and other large vehicles that would hold groups of people. This year on July 4th a significant change was made, and users were charged “per person” for access to the facility, eliminating any advantage for arriving in a large vehicle, or arriving as a pedestrian without a vehicle. This change was well publicized ahead of time, and the result appears to have been a significant reduction in attendance as detailed below.

One other physical change this year was the addition of the new northbound right turn deceleration lane and related improvements at the main gate.

Year 2013 Reservoir Access Compared With Previous Years (See Table 1):

July 4th

The July 4th holiday was the first summer event observed in 2013. As noted above, the “per person” fee structure appears to have resulted in a significant reduction in vehicles and visitors accessing the reservoir. This year the number of automobiles counted entering or leaving the reservoir (1,027 vehicles from 11 AM to 2 PM and 4 PM to 7 PM) was only 32% of the 3,200 vehicles observed last year. Given that last year there were likely more persons per vehicle, the actual attendance percentage this year may have been even lower.

The percentage reduction in bicyclists and pedestrians accessing the reservoir was even greater with this year’s total at only 14% of last year.

This year approximately 450 automobiles were parked at the reservoir between 2:30 and 3:30 PM.

Last year on the 4th there were long northbound vehicle queues on N. 51st Street that extended back from the main entrance (over the hill and out of sight to the south) as vehicles waited to enter the reservoir during peak arrival times. This year, with the combination of lower traffic numbers and the new right turn lane, the northbound vehicle queues never exceeded the length of the new turn lane.

One final comparison on July 4th between this year and last year involves the total amount of daily traffic (24-hour period) on N. 51st Street. Traffic was counted south of the reservoir between Kelso Road and Jay Road, and north of the reservoir between the main access and Monarch Road. These counts include reservoir access traffic, local residential traffic, and any cut-through traffic in the 51st Street corridor. The results are summarized as follows:

July 4th 24-Hour Traffic Count on N. 51st Street

	Year 2012	Year 2013	2013 as % of 2012
North of Reservoir Access	1,522 vehicles	523 vehicles	34%
South of Reservoir Access	7,236 vehicles	2,697 vehicles	37%

It can be seen that these results generally track with the reduction in traffic accessing the reservoir on the July 4th holiday.

Typical Summer Fridays and Saturdays

Access traffic was observed on a Friday and Saturday in late July between 11 AM and 7 PM. On Friday 556 vehicles were counted entering or exiting the reservoir. This represents 73% of the access traffic on a similar Friday last year. The 31 bicyclists and pedestrians observed this year were approx. 72% of those observed last year.

On Saturday 1,010 vehicles were observed which represents approximately 56% of a similar Saturday last year. Surprisingly, the 210 bicyclists and pedestrians observed this year was higher than the 137 observed last year.

When we combine total access traffic on both Friday and Saturday we note that this year's traffic was approximately 2/3 of last year's (66%). It can also be seen in Table 1 that the peak hour arrival and departure counts collected in the Year 2008 are very similar to the access traffic observed in 2012, and this year's peak hour counts represent 69% of the previous year totals.

It is not clear if the reduction in Friday and Saturday access traffic observed this year was influenced by the publicized July 4th pricing structure change that was implemented on the holiday earlier in the month.

Ironman Race

In 2012 a total of over 2,300 vehicles were observed accessing the reservoir on the day of the event (5 to 7 AM and 12 to 4 PM). This year's event was even more popular with a total of nearly 4,000 vehicles observed (+ 47%) during the same time periods.

Approximately 1,800 vehicles were parked at the reservoir between 10:00 AM and Noon this year. After 12-Noon some additional parking spaces were made available, and an additional 300+ vehicles were observed using this new space.

Muddy Buddy Race

Last year the Muddy Buddy event was held on a Sunday, and 1424 vehicles were observed arriving or departing between 5 to 9 AM and 11 AM to 1 PM. This year's data collection also included six hours, but the actual hours were a bit different (5 to 7 AM and 12 to 4 PM). This year 549 vehicles were observed (39% of last year) but it is not clear if the shift in data collection hours made a significant difference.

The actual peak access hours counted were the same both years, and again this year's total during the peak inbound and outbound hours was 39% of last year.

Approximately 750 automobiles were observed in reservoir parking lots between 10:00 AM and Noon this year.

It is not clear why one event such as the Ironman Race would be much more popular this year, while another event such as the Muddy Buddy Race would be much less popular.

Summary and Conclusions

The Boulder Parks and Recreation Department has begun compiling a set of peak event and average day multi-modal access information each summer at the Boulder Reservoir. This information allows a comparison of facility use from year to year, and may also help test the effectiveness of access management measures. By comparing current Year 2013 access data to Year 2012 it can be seen that:

- On July 4th this year, traffic accessing the reservoir was approximately 1/3 of last year's traffic.
- On a typical Friday and Saturday in July, this year's traffic access was approximately 2/3 of last year's traffic.
- This year the Ironman Race had an increase of approximately 47% more access traffic than last year.
- This year the Muddy Buddy race saw a significant decline in traffic access, with less than 40% of last year's traffic access.
- In 2012 the July 4th holiday was the busiest day recorded at the reservoir (in terms of traffic access). This year the Ironman Race day was the busiest of the summer.
- Improvements at the main access, including a right turn deceleration lane, have helped minimize the impact of access traffic on N. 51st Street.

This year a new set of peak parking occupancy observations were initiated. The peak observation this summer was over 2,000 vehicles parked during the Ironman race event.

Clearly the well publicized change in how reservoir users were charged for access on the July 4th holiday this year (per person rather than per vehicle) seems to have resulted in a significant reduction in the number of holiday attendance. What is not clear is whether this change on the holiday influenced the number of users on the other "typical" Fridays and Saturdays, even though there was no pricing change on those days.

I hope this information is helpful to Parks and Recreation staff during continued efforts to manage the Boulder Reservoir. Please let me know if you have any questions.

BF/

Attachments: Tables 1 - 3

Table 1
Boulder Reservoir Traffic Access Study



Summary of Traffic Access Observations for Multiple Events

 = Year 2013 data

Date:	7/12/2008	7/18/2008	9/27/2008	7/4/2012	7/4/2013	7/20/2012	7/26/2013	7/21/2012	7/27/2013	8/5/2012	8/4/2013	8/12/2012	8/10/2013
Day of the Week:	Saturday	Friday	Saturday	Wednesday	Thursday	Friday	Friday	Saturday	Saturday	Sunday	Sunday	Sunday	Saturday
Period Observed:	11 AM - 4 PM	1:30 - 5:30 PM	9 AM - 1 PM	11 AM - 2 PM, 4 - 7 PM	11 AM - 2 PM, 4 - 7 PM	11 AM - 7 PM	11 AM - 7 PM	11 AM - 7 PM	11 AM - 7 PM	5 - 7 AM, 12 - 4 PM	5 - 7 AM, 12 - 4 PM	5 - 9 AM, 11 AM - 1 PM	5 - 7 AM, 12 - 4 PM7
Event:	Typical Summer Saturday	Typical Summer Friday	Concert	July 4th	July 4th	Typical Summer Friday	Typical Summer Friday	Typical Summer Saturday	Typical Summer Saturday	Ironman Race	Ironman Race	Muddy Buddy Event	Muddy Buddy Event
Peak Hour Access:													
Inbound Peak Hour:	12 - 1 PM	4 - 5 PM	9 - 10 AM	12 - 1 PM	11:30-12:30 PM	11 AM - 12 PM	11 AM - 12 PM	11 AM - 12 PM	12 - 1 PM	5 - 6 AM	5:30 - 6:30 AM	5:15 - 6:15 AM	5:15 - 6:15 AM
Inbound Automobiles	204	56	82	472	140	79	36	188	108	849	987	403	123
Outbound Automobiles	56	65	36	16	57	28	75	87	41	28	48	34	23
Inbound/Outbound Bicycles	44	4	4	146	48	3	9	34	61	74	0	4	1
Inbound/Outbound Pedestrians	21	3	107	88	4	5	2	11	10	5	16	2	1
Outbound Peak Hour	2:30 - 3:30 PM	3 - 4 PM	11 AM - 12 PM	4 - 5 PM	4 - 5 PM	4 - 5 PM	4 - 5 PM	3 - 4 PM	3 - 4 PM	3 - 4 PM	2 - 3 PM	12 - 1 PM	12 - 1 PM
Inbound Automobiles	86	42	55	140	32	43	20	98	31	9	102	84	12
Outbound Automobiles	162	82	43	513	162	81	51	190	116	387	528	359	189
Inbound/Outbound Bicycles	32	9	10	75	20	2	6	11	24	48	15	16	12
Inbound/Outbound Pedestrians	8	5	14	75	6	0	4	0	1	17	14	5	22
Total Daily Access:													
Period Observed:	11 AM - 4 PM	1:30 - 5:30 PM	9 AM - 1 PM	11 AM - 2 PM, 4 - 7 PM	11 AM - 2 PM, 4 - 7 PM	11 AM - 7 PM	11 AM - 7 PM	11 AM - 7 PM	11 AM - 7 PM	5 - 7 AM, 12 - 4 PM	5 - 7 AM, 12 - 4 PM	5 - 9 AM, 11 AM - 1 PM	5 - 7 AM, 12 - 4 PM7
Inbound Automobiles				1,562	453	372	245	815	426	1,453	1,991	717	231
Outbound Automobiles				1,648	574	387	311	977	584	875	1,400	707	318
Inbound/Outbound Bicycles				604	117	36	30	116	206	...(1)	...(1)	...(1)	...(1)
Inbound/Outbound Pedestrians				452	30	16	1	21	4	...(1)	...(1)	...(1)	...(1)
Event Description and Observations:	A typical summer Saturday in 2008. It was clear and hot.	A typical summer Friday afternoon in 2008. Clear and warm.	Tatanka Festival, attendance lower than anticipated. No weather issues.	July 4th, 2012. Hot and clear. One of the busiest days of the year. Over 4,300 people observed on the south shore at 3:00 PM		A typical summer Friday in 2012. It was clear and warm.		A typical Saturday afternoon in 2012. It was clear and warm. Over 500 people observed on the south shore at 1:30 PM		Well attended triathlon with 1877 racers.		A bike and run obstacle course race with over 1500 participants	

1. Pedestrian and bicycle access counts skewed by racers entering and leaving the reservoir gates during the race.

Table 2

Boulder Reservoir Access Study

Summer 2012 - Combined Automobile Access (Inbound or Outbound) at the Gates on 51st Street

Vehicles Per Hour



Time	Day or Event									
	July 4th Inbound	July 4th Outbound	Typical Friday Inbound	Typical Friday Outbound	Typical Saturday Inbound	Typical Saturday Outbound	Ironman Inbound	Ironman Outbound	Muddy Buddy Inbound	Muddy Buddy Outbound
5 - 6 AM							849	27	120	31
6 - 7 AM							557	30	317	13
7 - 8 AM									93	20
8 - 9 AM									17	16
9 - 10 AM										
10 - 11 AM										
11 - 12 AM			79	28	188	87			86	243
12 - 1 PM	425	39	65	30	110	133	18	16	84	384
1 - 2 PM	472	16	49	58	125	106	14	96		
2 - 3 PM	417	189	41	48	160	110	6	319		
3 - 4 PM			41	66	98	190	9	387		
4 - 5 PM	140	512	43	81	81	141				
5 - 6 PM	64	422	38	36	32	127				
6 - 7 PM	44	470	16	40	21	83				
Total Observed:	1562	1648	372	387	815	977	1453	875	717	707

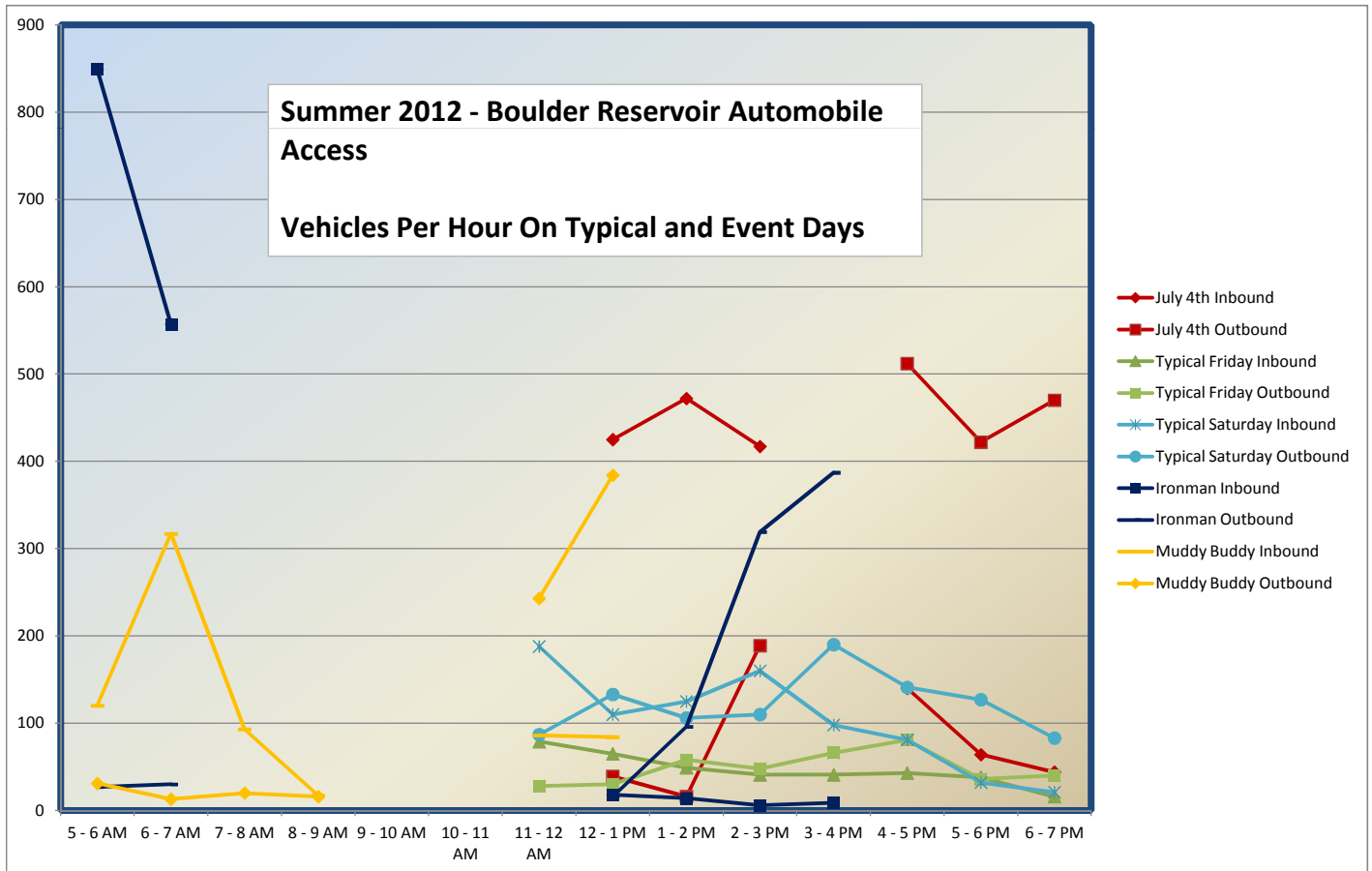


Table 3

Boulder Reservoir Access Study

Summer 2013 - Combined Automobile Access (Inbound or Outbound) at the Gates on 51st Street

Vehicles Per Hour



Time	Day or Event									
	July 4th Inbound	July 4th Outbound	Typical Friday Inbound	Typical Friday Outbound	Typical Saturday Inbound	Typical Saturday Outbound	Ironman Inbound	Ironman Outbound	Muddy Buddy Inbound	Muddy Buddy Outbound
5 - 6 AM							714	46	114	20
6 - 7 AM							878	37	98	14
7 - 8 AM										
8 - 9 AM										
9 - 10 AM										
10 - 11 AM										
11 - 12 AM	115	44	43	29	90	58				
12 - 1 PM	142	58	48	30	108	41	171	84	10	175
1 - 2 PM	141	72	36	74	92	59	98	314	8	106
2 - 3 PM			31	46	52	98	64	533	1	2
3 - 4 PM			16	20	27	94	66	386	0	1
4 - 5 PM	32	162	20	51	31	116				
5 - 6 PM	14	118	29	26	16	76				
6 - 7 PM	9	120	22	35	10	42				
Total Observed:	453	574	245	311	426	584	1991	1400	231	318

